

AMENDMENTS TO THE CLAIMS

This listing will replace all prior versions, and listings, of claims, in the application:

Listing of Claims:

1. (currently amended) A diaphragm valve ~~(5)~~ having a plurality of external ports and, which comprises comprising:
- a valve body (1), ~~consisting of having~~ having an inlet sleeve (3) and an outlet sleeve (4) each connected to an external entry port, which have a curved shape the inlet sleeve (3) and outlet sleeve (4) having an arched profile in the longitudinal direction and equal a circular sections cross-section at the external entry port; and converge one into the other until they open into
- a fluid flow chamber where the inlet sleeve (3) and outlet sleeve (4) converge, which contains the valve seat (106), substantially consisting of the flattened and slightly concave surface of the line (6) of intersection of the two sleeves (3, 4) on the opposed sides thereof, which chamber is divided into two parts with respect to a plane parallel to the plane tangent to the lower apex of the surface of the valve seat (106), one part whereof is integrated in the fluid chamber having one part integral with the valve body (1), and is and peripherally delimited by a body clamping flange (101) that contains a flow chamber port, and the other another part consists of comprising a bonnet (2) to be sealably secured onto said valve body (1), which bonnet has the bonnet having a coincident peripheral bonnet clamping flange (102) coincident with the body clamping flange (101)[[.]];
- a valve seat (106) contained in the flow chamber, the valve seat having an arched profile of substantially elliptical curvature and a flattened surface, the valve seat (106) being

shaped by the intersection of the arched profiles of the inlet sleeve (3) and outlet sleeve (4) on the side of the valve body (1) opposite to the bonnet;

an open/close element consisting of an elastic comprising a diaphragm (5) being provided, made of rubber or the like, which has made of an elastomeric material, the diaphragm comprising a peripheral sealing flange (105) to be clamped between the peripheral flanges (101, 102) of said two parts of the chamber body clamping flange (101) and the bonnet clamping flange (102), said sealing flange (105) being connected to a central dome-shaped convex part (305), the dome having a convex side and a concave side, the concave side being whose convexity is oriented, in an unstressed position, toward the valve seat (106)[[.]]; and

means being provided, on the concave side of the diaphragm (5), facing toward the bonnet, to compress for compressing the diaphragm against the surface of the valve seat (106) in such a manner that, when the diaphragm (5) is compressed against said surface (106), to prevent any fluid flow from the inlet sleeve (3) to the outlet sleeve (4) is prevented whereas, while allowing free fluid flow when the diaphragm (5) dome (305) is lifted and deformed toward the bonnet (2), free fluid flow is allowed,

characterized in that wherein the cross sections of the inlet sleeve (3) and the outlet sleeve (4), at the ends opening into the flow chamber, and at the valve seat (106), are flattened in the direction of flow, i.e. along the axis that joins the centers of the two inlet and outlet ends of the sleeves, opening into the flow chamber have an elongated shape at the respective openings into the fluid flow chamber, the cross sections of the inlet sleeve (3) and the outlet sleeve (4) being and are elongated in a direction transverse to the direction of flow, particularly having a substantially elliptic shape, or anyway inscribable in a substantially

~~rectangular peripheral clamping flange (101), and with the longer side disposed in a direction transverse to the direction of flow,~~

wherein the peripheral sealing flange (105) of the diaphragm (5) having corresponding rectangular shape, has an elongated shape inscribing the central convex portion dome (305) of the diaphragm (5),

wherein the sealing flange is joined to the dome along a substantially elliptical edge having a longer central axis and a shorter central axis, and

wherein the dome (305) which consists of an element having the shape of is substantially shaped like a sector of an ellipsoid or similar, whose section plane is disposed in such a manner as so to correspond with cooperate with the flow chamber port.

2. (currently amended) A- ~~The~~ valve as claimed in claim 1, characterized in that, ~~from the respective free ends to the ends that open into the flow chamber, the sleeves (3, 4)~~ wherein the inlet sleeve (3) and outlet sleeve (4) each have a cross section that progressively widens widening in [[a]] the direction transverse and substantially perpendicular to the flow direction and to the radius of curvature of the arched profile and parallel to the separation plane between the two chamber parts (1, 2), and progressively narrows narrowing in [[a]] the longitudinal direction substantially coincident with the bending radius of each sleeve (3, 4) of the inlet and outlet sleeves,

so that wherein the flow chamber port, at the flange (101) of the chamber part integrated in the valve body (1), has a shape that is flattened elongated in the flow direction and elongated in a direction transverse to said flow direction, and particularly has a substantially elliptic shape, or anyway inscribable in a peripheral, substantially rectangular clamping flange (101), with the longer side disposed transverse to the flow direction perpendicular to the longitudinal axis of the diaphragm valve, the peripheral flange (105) of

~~the diaphragm (5) sealing flange having a corresponding rectangular shape matching the shape of the bonnet clamping flange and [[,]] inscribing the central convex portion dome (305) of the diaphragm (5), which consists of an element having the shape of a sector of an ellipsoid or similar, whose section plane is disposed in such a manner as to correspond with the flow chamber port.~~

3. (currently amended) A- ~~The~~ valve as claimed in claim 1 ~~or~~ 2, characterized in that the dome (305) of the diaphragm (5) has one or more stiffening ribs ~~(405, 505)~~, to enhance the ~~resiliency~~ mechanical properties of the dome (305) ~~from the condition in which it is deformed toward the bonnet (2) to the normal unstressed condition, with the convexity being oriented toward the valve seat (106), in such a manner as~~ and to prevent the dome (305) from ~~bowing out~~ bulging when the ~~latter dome (305)~~ is compressed against the valve seat (106).

4. (currently amended) A- ~~The~~ valve as claimed in ~~one or more of the preceding claims, characterized in that~~ claim 3, wherein at least one rib (405) is provided on the ~~concave side of the dome (305) of the diaphragm (5), facing toward the bonnet (2) and is oriented substantially parallel with the longer axis of the dome (305), which rib is oriented along the central longer axis of said dome (305), or at least two crossed ribs (405, 505) may be provided therein, oriented along the longer axis and the shorter axis of the section plane of the sector of ellipsoid that forms the dome (305).~~

5. (currently amended) A- ~~The~~ valve as claimed in ~~one or more of the preceding claims, characterized in that~~ claim 3, wherein a plurality of ribs (505) ~~are~~ is provided on the ~~concave side of the dome (305) of the membrane (5), facing toward the bonnet (2) and is oriented substantially parallel to the shorter axis of the dome (305), which ribs are oriented transverse, preferably perpendicular to the longer axis of the dome (305) and/or are oriented~~

~~along the shorter axis of the dome (305), which may be equally spaced or distributed unevenly along said longer axis and/or may be symmetrical with respect to it or have non coincident positions on the two sides of said longer axis.~~

6. (currently amended) ~~A- The valve as claimed in one or more of the preceding claims 1 to 4, characterized in that~~ claim 3, further comprising at least one or more additional pairs of ribs (505) are provided on the concave side of the dome (305) of the diaphragm (5), facing toward the bonnet (2), which the one or more pairs of ribs are being disposed in such a manner as to divide the four quadrants formed by the rib (405) along the longer axis and the transverse rib (505) along the shorter axis, the dome into two or more webs, while connecting the center longer central axis of the dome (305) with the arched periphery of the dome (305) the sealing flange.

7. (currently amended) ~~A- The valve as claimed in one or more of the preceding claims, characterized in that~~ claim 3, further comprising a central stiffening member (605), particularly having a circular 2 shape, is provided on the concave side of the dome (305) of the diaphragm (5) that faces toward facing the bonnet (2).

8. (currently amended) ~~A- The valve as claimed in one or more of the preceding claims, characterized in that~~ claim 7, wherein the one or more stiffening ribs (405, 505) and/or and the central stiffening member (605) consist of local are locally thickened wall portions of the dome (305) of the diaphragm (5).

9. (currently amended) ~~A- The valve as claimed in one or more of the preceding claims, characterized in that~~ claim 3, wherein the dome (305) of the diaphragm (5) has a constant thickness, whereas and which at least some of the one or more stiffening ribs (405, 505) have a thickness that progressively increases increasing toward the center of the dome (305).

10. (currently amended) ~~A- The~~ valve as claimed in ~~one or more of the preceding~~ claims, ~~characterized in that~~ claim 1, further comprising means (705, 402) are provided for holding retaining the periphery of the sealing flange (105) of the diaphragm (5) in position, thereby preventing the sealing flange (105) in such a manner as to prevent it from sliding along the plane of the clamping flanges (101, 102) of the bonnet (2) and the valve body (1), and from being pulled out from between said coupled clamping flanges (101, 102) junction of the bonnet clamping flange and the body clamping flange.

11. (currently amended) ~~A- The~~ valve as claimed in ~~one or more of the preceding~~ claims, ~~characterized in that~~ claim 10, wherein said retaining means consist of comprise one or more retaining teeth arranged along the peripheral edge of the extending in a substantially perpendicular direction from the sealing flange (105) of the diaphragm (5), which extend over the surface of the outer edge of the flanges (101, 102) of the valve body and/or the bonnet with a vertical orientation with respect to the plane of the flanges (101, 102) at the outer edges of the bonnet clamping flange and the body clamping flange.

12. (currently amended) ~~A- The~~ valve as claimed in ~~one or more of the preceding~~ claims, ~~characterized in that said~~ claim 10, wherein the retaining means consist of two retaining tabs (705), each being provided along one of the longer sides of the sealing flange (105) of the diaphragm (5), particularly in the intermediate area between two through holes (205) into which pins are inserted to hold the flange (102) of the bonnet (2) against the flange of the valve body (1), each of which holes (205) is provided in one of the four corners of the flange (105) of the diaphragm (5), which tabs extend and extending over the corresponding surface of the outer edge of the body clamping flange (101) of the valve body (1) with a vertical an orientation with respect substantially perpendicular to the plane of said body clamping flange (101).

13. (currently amended) A- ~~The~~ valve as claimed in ~~one or more of the preceding~~ claims, ~~characterized in that~~ claim 10, wherein the retaining means consist of comprise one or more bosses (402) provided on the clamping surface of the ~~flanges (101, 102) of the bonnet (2) and/or the valve body (1)~~ body clamping flange and bonnet clamping flange, which, ~~with said two flanges (101, 102) in the coupled condition, compress the one or more bosses compressing~~ the corresponding portion of the sealing flange (105) of the diaphragm (5) thereby and further preventing it from being slid out the sealing flange (105) from sliding out of position.

14. (currently amended) A- ~~The~~ valve as claimed in ~~one or more of the preceding~~ claims, ~~characterized in that~~ claim 10, wherein said retaining means consist of a substantially elliptic continuous or discontinuous projection (402)[[.]] provided on the ~~clamping surface of the flange (102) of the bonnet (2)~~ bonnet clamping flange, the substantially elliptic projection which, ~~with said flange being pressed against the flange (101) of the valve body (1), extends along the substantially elliptic peripheral edge of the dome (305) of the diaphragm (5) and at a certain distance therefrom, being positioned to be substantially parallel to the dome (305) and to press against the sealing flange (105).~~

15. (currently amended) A- ~~The~~ valve as claimed in ~~one or more of the preceding~~ claims, ~~characterized in that~~ claim 1, further comprising means (502) are provided for centering the bonnet (2) with respect to the valve body (1) and for laterally limiting any outward extension of the sealing flange (105) of the diaphragm (5).

16. (currently amended) A- ~~The~~ valve as claimed in ~~one or more of the preceding~~ claims, ~~characterized in that~~ claim 15, wherein said means for centering consist of comprise one or more retaining teeth arranged along the outer peripheral edge of the bonnet clamping flange (102) of the bonnet part (2), which extend and extending over the surface of the outer

edge of the body clamping flange (101) ~~of the valve body (1)~~ with a ~~vertical~~ substantially perpendicular orientation ~~with respect to the plane of the flanges (101, 102)~~. body clamping flange (101).

17. (currently amended) A- ~~The valve as claimed in one or more of the preceding claims, characterized in that~~ claim 16, wherein said means consist of for centering comprise a tab (502) ~~that continuously extends~~ continuously extending along the ~~whole entire~~ peripheral edge of the bonnet clamping flange (102) ~~of the bonnet (2)~~, which tab (502) ~~extends~~ and extending over the corresponding surface of the outer edge of the body clamping flange (101) ~~of the valve body (1)~~, with a ~~vertical~~ substantially perpendicular orientation with respect to the plane of said body clamping flange (101).

18. (currently amended) A- ~~The valve as claimed in one or more of the preceding claims, characterized in that~~ claim 1, wherein the sealing flange (105) ~~of the diaphragm (5)~~ has at least one lip seal ~~(805, 805')~~, ~~particularly having a substantially elliptic shape, on at least one face, preferably on both faces, which seal extends~~ extending along parallel to the peripheral edge of the dome (305) ~~of the diaphragm (5)~~ and at a ~~certain~~ distance therefrom.

19. (currently amended) A- ~~The valve as claimed in one or more of the preceding claims, characterized in that~~ claim 1, further comprising a central, rounded lip seal (905) is ~~provided on the convex side of the dome (305) of the diaphragm (5) facing toward the valve seat (106), which~~ the lip seal extends extending along the longer axis of ~~the section plane of the sector of ellipsoid that forms the dome (305) and which, with the dome (305) compressed against said valve seat (106), acts~~ acting as a compliant element ~~and helps favoring the adhesion of the dome (305) to adhere against said~~ against the valve seat (106), so to prevent any fluid flow from the inlet sleeve (3) to the outlet sleeve (4).

20. (currently amended) ~~A- The~~ valve as claimed in ~~one or more of the preceding~~ claims, ~~characterized in that~~ claim 1, further comprising a rib ~~is provided~~ in an intermediate position ~~of at least the port~~ at the opening of the outlet sleeve (4) ~~opening~~ into the flow chamber, ~~which rib is~~ the rib being oriented in the flow direction and ~~is being~~ substantially perpendicular to the plane tangent to the lower apex of the surface of the valve seat (106), ~~which has the rib having a surface, at its at the edge facing toward the dome (305) of the diaphragm (5), a that is flattened and correspondingly curved surface curved to cooperate with the dome, in such a manner as so~~ to prevent the dome (305) from ~~bowing out when the latter is bulging when~~ compressed against the valve seat (106).

21. (currently amended) ~~A- The~~ valve as claimed in ~~one or more of the preceding~~ claims, ~~characterized in that it~~ claim 1, wherein the valve is actuated, wherein the valve is a manually ~~operated~~ actuated valve, a mechanically actuated valve, a hydraulically actuated valve, or a servo actuated valve.

22. (currently amended) ~~A- The~~ valve as claimed in ~~one or more of the preceding~~ claims, ~~characterized in that it~~ claim 21, wherein the valve is a mechanically operated actuated valve, further comprising a compressor element (8) ~~being provided~~ on the side of the dome (305) ~~of the diaphragm (5) facing toward the bonnet, which element has the~~ compressor element having a pressing surface ~~whose~~ of a shape ~~[[is]]~~ complementary to the dome (305), ~~and is~~ the compressor being rotatably linked to the inner end of a slidable control stem which is passed through a hole formed in the bonnet ~~part~~ (2).

23. (currently amended) ~~A- The~~ valve as claimed in ~~one or more of the preceding~~ claims, ~~characterized in that it~~ claim 21, wherein the valve is a hydraulically operated valve, further comprising means (203, 302) ~~being provided~~ for supplying a pressurized fluid, ~~preferably the same fluid as supplied to the inlet sleeve (3) of the valve, between the bonnet~~

part (2) and the dome (305) of the diaphragm (5), for the purpose of compressing the dome (305) against the valve seat (106) to and close the valve, and further comprising means for discharging said pressurized fluid to and open the valve.

24. (currently amended) ~~A~~ The valve as claimed in ~~one or more of the preceding~~ claims, characterized in that claim 1, further comprising means (7) ~~are provided~~ for elastically preloading the dome (305) of the diaphragm (5), ~~whose convexity is oriented toward~~ towards the valve seat (106).

25. (currently amended) ~~A~~ The valve as claimed in ~~one or more of the preceding~~ claims, characterized in that claim 24, wherein said means ~~consist of~~ for elastically preloading comprise a spring (7) ~~which is interposed in the central position of the opposed~~ between the opposing surfaces of the bonnet (2) and the dome (305) of the diaphragm (5), while a rigid pressure element (8) ~~of a, whose shape corresponds~~ corresponding to the concave surface ~~side~~ of the dome (305), ~~may be~~ is interposed between said spring (7) and said dome (305).

26. (currently amended) ~~A~~ The valve as claimed in ~~one or more of the preceding~~ claims, characterized in that claim 1, wherein the valve body (1) is made of plastic, the fluid flow chamber ~~being composed of~~ further comprising two pocket-like chambers closed at their ~~bottoms,~~ external sides and open at their ~~upper~~ internal sides, ~~which the~~ pocket-like chambers (13, 14) ~~are being~~ disposed in adjacent positions, ~~with their upper openings the~~ internal sides of the pocket-like chambers being connected to a common opening (206) of the fluid flow chamber, ~~that has a flattened~~ the common opening having an elongated shape in the flow direction, ~~particularly an oval shape, and especially an elliptic shape, which edge of the opening (206) is and being~~ surrounded by ~~[[a]] the body~~ clamping flange (101) ~~that is inscribable in a rectangle of a cooperating elongated shape, whereas~~ the two pocket-like

chambers (13, 14) ~~have~~ having each two opposed walls (113, 114), ~~whose upper edge, facing toward and having upper edges of concave shape that face the opening (206) is concave and that arched in such a manner as to slope down toward~~ in the direction of the central area of the fluid flow chamber from the two opposite opposing points ends substantially ~~provided~~ level with the peripheral flange (101) and/or with the edge of the opening (206), whereas said upper edges of the two opposed walls (113, 114) ~~of the two pocket-like chambers (13, 14) are being~~ connected to each other by a surface ~~that forms~~ forming the valve seat (106).

27. (currently amended) ~~A~~ The valve as claimed in claim 26, ~~characterized in that the inlet and outlet sleeves (3, 4) are connected substantially perpendicular to the sides of the pocket-like chambers (13, 14), which~~ wherein the sides ~~walls of the pocket-like chambers are substantially perpendicular or transverse to the flow direction, and wherein the inlet sleeve (3) and outlet sleeve (4) have longitudinal axes substantially perpendicular to the walls of the pocket-like chambers, the axes of said sleeves (3, 4) being oriented substantially perpendicular to the axes of the upper openings of the pocket-like chambers (13, 14) and/or of the common opening (206).~~

28. (currently amended) A valve as claimed in claim 26 ~~or 27~~, ~~characterized in that~~ wherein the two opposed walls (113, 114) of the two pocket-like chambers (13, 14) are divergent ~~and/or possibly spaced and divergent and are~~ connected together by a plurality of stiffening ribs that are oriented perpendicular to the body clamping flange (101) and parallel to the flow direction.

29. (currently amended) A valve as claimed in claim 28, ~~characterized in that~~ wherein at least some of the plurality of stiffening ribs for connecting the opposed walls of the two pocket-like chambers (13, 14) extend all over the for the entire length of the ~~outer edge of the two opposed walls (113, 114) of said pocket-like chambers (13, 14) from the~~

~~outer end that forms the valve seat (106) to a position substantially flush with the bottom side of the pocket-like chambers (13, 14) in a direction perpendicular to the body clamping flange (101).~~

30. (currently amended) A valve as claimed in claim 28, ~~characterized in that wherein~~ at least some of the stiffening ribs ~~for connecting the two pocket-like chambers (13, 14) extend all over the height of the outer edge for the entire length of the two opposed walls (113, 114) of said pocket-like chambers (13, 14) from the outer end that forms the valve seat (106) to a position beyond the bottom side of the pocket-like chambers (13, 14) to reach the~~ outer surface of the valve body, thereby forming supporting ~~spacers or feet.~~

31. (currently amended) ~~A~~ The valve as claimed in ~~one or more of the preceding claims, characterized in that claim 1, wherein~~ the bonnet (2) is made of a resilient material, wherein the resilient materials is plastic or sheet metal, ~~the latter being shaped by a drawing or molding process.~~

32. (currently amended) ~~A~~ The valve as claimed in ~~one or more of the preceding claims, characterized in that claim 1, wherein~~ the sealing flange (105) of the diaphragm (5) is clamped between the body clamping flange (101) of the valve body (1) and the bonnet clamping flange (102) of the bonnet (2) by using more than four or more fastening bolts ~~at in the proximity of the corners of the shorter sides of said body clamping and bonnet clamping flanges, i.e. of the sides thereof that are oriented in the flow direction.~~

33. (currently amended) ~~A diaphragm valve, wholly or partly substantially as described, illustrated and for the purposes stated herein~~ The valve as claimed in claimed 32, wherein the body clamping flange (101) and the bonnet clamping flange (102) have rectangular shapes.

34. (currently amended) A diaphragm open/close element for a diaphragm valve as ~~claimed in one or more of the preceding claims, characterized in that it has comprising:~~

a dome (305) having a concave side and a convex side, the dome being shaped like a portion of an ellipsoid and having a longer central axis and a shorter central axis; and

a peripheral sealing flange (105) that has a corresponding having a substantially rectangular shape, which inscribes the central convex portion (305) of the diaphragm (5), consisting of an element shaped like a sector of an ellipsoid or similar, the sealing flange being joined to the dome and surrounding the dome, which is joined to said flange (105), disposed in the section plane of said ellipsoid or the like.

35. (currently amended) ~~A~~ The diaphragm open/close element as claimed in claim 34, characterized in that wherein the dome (305) of the diaphragm (5) has one or more stiffening ribs (405, 505), to enhance increasing the mechanical properties of the dome the resiliency of the dome (305) from the deformed condition to the normal unstressed condition, in such a manner as to prevent and preventing the dome (305) from bowing out bulging when the latter dome is stressed to the closed condition close the diaphragm valve.

36. (currently amended) ~~A~~ The diaphragm open/close element as claimed in claim 34 or 35, characterized in that wherein at least one stiffening rib (405) is provided situated on the concave side of the dome (305) of the diaphragm (5), which rib and is oriented along one of the central longer axis axes of said dome (305), or at least two crossed ribs (405, 505) may be provided therein, oriented along the longer axis and the shorter axis of the section plane of the sector of ellipsoid that forms the dome (305).

37. (currently amended) ~~An~~ The diaphragm open/close element as claimed in claim 36, characterized in that a plurality of ribs (505) are provided on the concave side of the dome (305) of the membrane (5), which ribs are oriented transverse, preferably perpendicular

~~to the longer axis of the dome (305) and/or are oriented along the shorter axis of the dome (305), which may be equally spaced or distributed unevenly along said longer axis and/or may be symmetrical with respect to it or have non-coincident positions on the two sides of said longer axis wherein a plurality of ribs is oriented parallel to the shorter central axis of the dome.~~

38. (currently amended) ~~An~~ The diaphragm open/close element as claimed in one or more of the preceding claims 34 to 37 claim 35, characterized in that at least, wherein the dome has one ribs along its longer central axis, further comprising one or more additional pairs of ribs (505) ~~are provided on the concave side of the dome (305) of the diaphragm (5), which, the one or more additional pairs of ribs are being~~ disposed in such a manner as to divide the four quadrants formed by the rib (405) along the longer axis and the transverse rib (505) along the shorter axis, into two or more webs, while connecting the center of the dome (305) ~~with the arched~~ connect the longer central axis with the periphery of the dome (305).

39. (currently amended) ~~An~~ The diaphragm open/close element as ~~elaimed in~~ one or more of the preceding claims 34 to 38, characterized in that claim 38, further comprising a central stiffening member (605), particularly having a circular shape, is provided on the concave side of the dome (305) ~~of the diaphragm (5).~~

40. (currently amended) ~~An~~ The diaphragm open/close element as claimed in one or more of the preceding claims 34 to 39, characterized in that the claim 39, wherein all ribs (405, 505) and/or and the central stiffening member (605) consist of local are locally thickened wall portions of the dome (305) ~~of the diaphragm (5), whereas wherein~~ the dome (305) ~~of the diaphragm (5)~~ has a constant thickness, and wherein ~~and~~ at least some of the stiffening ribs (405, 505) have a thickness that progressively increases toward in the direction of the center of the dome (305).

41. (currently amended) A diaphragm valve having a plurality of external ports and comprising:

a valve body (1) having an inlet sleeve (3) and an outlet sleeve (4) each connected to an external ports, inlet sleeve (3) and outlet sleeve (4) having an arched profile in the longitudinal direction and a circular cross-section at the external port;

a fluid flow chamber where the inlet sleeve (3) and outlet sleeve (4) converge, the fluid chamber having one part integral with the valve body (1), and peripherally delimited by a body clamping flange (101) that contains a flow chamber port, and another part comprising a bonnet (2) to be sealably secured onto said valve body (1), the bonnet having a coincident peripheral bonnet clamping flange (102) coincident with the body clamping flange (101);

a valve seat (106) contained in the flow chamber, the valve seat having an arched profile of substantially elliptical curvature and a flattened surface, the valve seat (106) being shaped by the intersection of the arched profiles of the inlet sleeve (3) and outlet sleeve (4) on the side of the valve body (1) opposite to the bonnet;

an open/close element comprising a diaphragm (5) made of an elastomeric material, the diaphragm comprising a peripheral sealing flange (105) to be clamped between the body clamping flange (101) and the bonnet clamping flange (102), said sealing flange (105) being connected to a central dome (305), the dome having a convex side and a concave side, the concave side being oriented, in an unstressed position, toward the valve seat (106); and

means for compressing the diaphragm against the valve seat (106), so to prevent any fluid flow from the inlet sleeve (3) to the outlet sleeve (4) while allowing free fluid flow when the dome (305) is lifted and deformed toward the bonnet (2),

wherein the cross sections of the inlet sleeve (3) and the outlet sleeve (4) have an elongated shape at the respective openings into the fluid flow chamber, the cross sections of the inlet sleeve (3) and the outlet sleeve (4) being elongated in a direction transverse to the direction of flow,

wherein the sealing flange (105) of the diaphragm (5) has an elongated shape inscribing the dome (305) of the diaphragm (5),

wherein the sealing flange is joined to the dome along a substantially elliptical edge having a longer central axis and a shorter central axis,

wherein the dome (305) is substantially shaped like a sector of an ellipsoid so to cooperate with the flow chamber port, and

wherein the A valve as claimed in one or more of the preceding claims, characterized in that the body of a meter or another a measuring device is integrated with the valve body.